

SHOP CLEANING AND TOOL STORAGE

AG 130-A

UNIT OBJECTIVE

After completion of this unit, students will be able to identify the importance and scope of the agricultural mechanics industry in the United States, Idaho, and the local community. Students will learn importance of a clean shop and proper tool storage. This knowledge will be demonstrated by completion of assignment sheets and a unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Store tools in their proper place being cabinets, tool boards or tool room.
2. Store equipment and materials properly.
3. Follow clean up assignments.
4. Clean shop properly as directed by the instructor.
5. Know procedures for repairing or replacing broken tools.

## SHOP CLEANING AND TOOL STORAGE

## A. Introduction:

The students should have a definite understanding of the requirements for a clean and orderly shop. All students should have a shop cleanup review before the first class laboratory exercise. A disorderly shop can lead to many unsafe conditions, which can result in accidents and injury. A clean shop can also reduce the costs to the department in the prevention of lost or damaged tools and equipment.

## B. Purpose of maintaining a clean shop and storing tools correctly.

When the United States entered World War II the shipyards were under tremendous pressure to build ships as rapidly as possible. Each shift of workers had a cleanup crew that put tools away, swept the floors, and sent broken tools in for repair. When the next shift started everything was in place and ready to use. Much time was saved because people didn't have to wonder around finding tools and all tools were in usable condition. Today, modern factories (maybe because of OSHA) are very strict in clean-up and tool storage.

1. All students work together in maintaining the shop learning teamwork and cooperation.
2. The risk of safety hazards is reduced in a clean shop because obstacles and spills are removed.
3. Students learn the layout of the shop faster when required to restore the shop to its original order on a daily basis. The placement of all tools and equipment is also learned faster. Students will spend less time searching for tools and equipment when needed.
4. Tools can regularly be checked for damage if they are returned to their assigned storage point after each use. This also reduces the incidence of lost tools.
5. Students can find their projects quicker if they are stored neatly in an assigned place. Properly stored projects will not interfere with the safety of other shop users nor will they hinder the accessibility of other projects.

## C. Shop requirements for an efficient cleaning and storage system, cabinets, tool boards, and tool rooms.

1. A tool board should be large enough to handle all of the hand tools used in the shop. A vertical board is recommended so all of the tools are visible at once and easily accessible.
2. The tool board or storage cabinet should have closing doors that can be locked for security.

3. The tools should be fitted so that each can hang individually when not in use. A system should be setup to store similar tools in the same sections to facilitate inventory checks. Nails and clips can be used to hang each tool.
4. Ideally, each tool is outlined, or silhouetted, so that each tool can be returned quickly to the correct spot. Missing tools are easily detected using this method.

#### D. Material Storage

1. Lumber, angle iron, steel rods, and scrap iron should be stored in vertical racks. Vertical racks facilitate both long and short items and utilize wall space better than most other material storage systems. The desired material can also be easily reached without removing too many additional materials.
2. Separate vertical racks should be used to store different types and widths of lumber and various metal materials.
3. Do not store materials past the horizontal stabilizer bars. The material will no longer be supported from falling and can cause serious injury.

#### E. Scrap Material

1. Separate bins should be supplied for scrap lumber and metal. These bins should be for material that cannot be reused. Reusable scraps should be stored in the vertical racks.
2. Never allow the scrap bins to overflow. Scrap material is a major source of clutter in many shops. It can become either a fire hazard or an accident risk if allowed to accumulate. Scrap material can often be sold and recycled. If not, it should be hauled to the dump on a regular basis.
3. Nails, staples, and other obstructions should be removed from scrap wood before it is placed in the scrap bin.
4. **HOT METAL MUST NEVER BE THROWN IN THE SCRAP BIN.** Burn injuries are common in many machine shops because students do not obey this rule. Hot metal also creates a fire hazard when improperly stored. All scrap metal bins should be marked with warnings to cool all metal before it is disposed.

#### F. Flammable Liquids

1. Flammable liquids--such as grease, oil, and solvents should be stored in special storage containers designed for this purpose. These storage containers are made of steel and are designed to close automatically in the presence of fire to prevent the spread of the fire.
2. Dirty rags are also a fire hazard in the shop. A metal container with a sealable lid should be provided to store all rags that have been exposed to grease, oil, or solvents.

3. Always store gasoline or rags that have been exposed to gasoline in a separate, well-ventilated area. Gasoline should never be stored in the shop due to its high combustibility.

#### G. Shop Cleaning Procedures

A well-organized and properly cleaned shop is the responsibility of every student in the class. The instructor should act only in a supervisory position once the students are oriented to the cleanup procedures. The cleaning procedure should follow a systematic approach. Some of the steps included in a thorough shop cleanup are as follows:

1. The teacher or appointed student signals for all work to cease at an appropriate interval before the end of class.
2. Each student cleans up his or her individual work area. Projects are properly stored and tools and equipment are returned to their proper places.
3. Solvents, grease, oil, paints, and other flammables are stored properly. Paintbrushes are cleaned and dried.
4. Scrap wood and metal are separated and placed in the appropriate waste bins. Scrap metal is cooled before being placed in the bin.
5. All spare metal and wood stock is returned to its appropriate rack.
6. All benches and machines are cleared with a brush. Dust, scraps, and waste are then swept towards the center of the aisle or floor. Assigned students use push brooms to clear the floor. All waste and trash is placed in the appropriate containers.
7. The teacher or appointed students check to make sure all of the tools and equipment has been returned to their appropriate places. All cleanup jobs are checked for completeness. No one leaves the shop until all jobs are done.
8. The tool cabinet and the material area are locked if a lock system is available.
9. Students wait in an orderly manner until dismissed by the instructor.

### METHODS OF CLEANING

#### A. Methods of Cleaning

1. The all-pitch-in method involves trusting each student to clean up individual projects and contribute to the overall shop cleaning. No individual tasks are assigned. It is the responsibility of the entire class to appropriately finish the cleaning job and assure that all tools, material, and equipment are accounted for.

2. Assignment sheets can also be developed so that each student has an individual responsibility in the cleanup procedure each day. The advantage of this system is that each student can be singled out as responsible when a portion of the job is not completed. Students can also be graded for their cleanup procedures using this method.
3. Work teams can be developed in which each group is responsible for a portion of the duties. The advantage of this system is similar to that for the assignment sheet method.
4. A clean-up wheel method can be developed in which a wheel is divided into two separate wheels, one within the other. The outer wheel is immobile and has each duty listed. The inner wheel has the names of individuals or work groups on it. The inner wheel is spun to determine which duty will be performed that day. This method helps to motivate students to perform their chores and assures them of performing many different tasks instead of the same one over and over. This system may become time consuming since time must be spent every class period to spin the wheel in order to assign tasks.
5. Any system can be used effectively to keep a shop clean and orderly. The method used will vary depending on whether the students are graded on their cleanup procedures and the amount of time available each day for cleanup. All systems are equally effective as long as they include all the students in the process and the procedure follows a systematic approach.

ACTIVITY:

1. Take the students on a tour of the shop to point out each cleaning task and its purpose. Have a walk-through of the cleanup procedure during one class period.
2. Develop a point system so students can compete to win an award for their clean-up performance.
3. Use films and videos to point out the dangers of an unkempt shop.
4. If not available already, have the students develop and build different storage facilities for tools, materials, and waste products. Have a competition for the best design.

References:

Cooper, Elmer L. (1997). AGRICULTURAL MECHANICS: FUNDAMENTALS AND APPLICATIONS, 3ed EDITION. Albany, NY: Delmar Publishers.

Phipps, Lloyd J., Miller, Glen M. (1998). AGRISCIENCE MECHANICS Danville, IL: Interstate Publishers, Inc.

Video References:

TOOL SECURITY AND MAINTENANCE Visual Education Productions, 1-800-235-4146 or [www.cev-inc.com](http://www.cev-inc.com)

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SALT LAKE CITY, UTAH 84107  
1-800-933-5943

Name \_\_\_\_\_

Date \_\_\_\_\_

## SHOP CLEAN-UP

Answer the following questions with a short answer.

1. What is reduced in a clean shop because obstacles and spills are removed?

\_\_\_\_\_

2. How often is the shop cleaned? \_\_\_\_\_

3. What reduces lost tools? \_\_\_\_\_

4. Does each tool have its' own place? \_\_\_\_ (yes / no)

5. What kind of tool storage does this shop have? \_\_\_\_\_

6. How many different storage areas does this shop have? \_\_\_\_\_

7. Where is each storage area located? (Some might have the same answer)

Steel? \_\_\_\_\_

Lumber? \_\_\_\_\_

Paint? \_\_\_\_\_

Scrap iron? \_\_\_\_\_

Engine Parts? \_\_\_\_\_

Oily rags? \_\_\_\_\_

Flammable Liquids? \_\_\_\_\_

Drill bits? \_\_\_\_\_

Brooms & Dust pans? \_\_\_\_\_

8. Who is allowed to leave before the shop is cleaned? \_\_\_\_\_

9. What clean up method is used in this shop? \_\_\_\_\_

10. What part of the daily work grade is clean-up? \_\_\_\_\_

11. How many clean-up tools does this shop have?

Push Brooms? \_\_\_\_\_

Hand Brooms? \_\_\_\_\_

Dust Pans? \_\_\_\_\_

Trash Cans? \_\_\_\_\_

12. How often are the trashcans emptied? \_\_\_\_\_

13. When does clean-up start? \_\_\_\_\_

14. How long does clean-up take? \_\_\_\_\_

15. Who determines when the shop is clean and everyone is done? \_\_\_\_\_

Answers to the quiz

1. Safety Hazards
2. Every time it is used
3. Proper tool storage
4. Yes
5. Unknown
6. Unknown
7. Unknown
8. No One
9. Instructors' Choice
10. 20%(it should be)
11. Unknown
12. Once a week, more often if needed
13. At a certain time or when the instructor calls for it.
14. 5 - 7 minutes
15. Shop foreman or the instructor